Before the
Federal Communications Commission
Washington, DC 20554

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In the Matter of:	)	
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The Commercial Mobile Alert System	)	PS Docket No. 07-287
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COMMENTS OF CELLCAST TECHNOLOGIES, LLC.

CellCast Technologies, LLC.[1] (*hereinafter* CellCast) hereby submits comments

concerning the Notice of Proposed Rulemaking of the Commission for establishing a

Commercial Mobile Alert System (CMAS) pursuant to the Warning, Alert, and Response

Network ("WARN") Act.[2] In the NPRM, the Commission seeks comments on numerous issues

and questions pertaining to the statutory requirements under the WARN Act. CellCast submits

comment with regard to some, but not all, of the requests for comments in the NPRM. As

suggested in the NPRM,[3] CellCast will provide comments referencing the paragraph numbers of

the NPRM and in numeric order as provided in the NPRM. As such the paragraphs in these

comments are not consecutively numbered. Additionally, each comment begins with a concise

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[1] CellCast Technologies (CellCast) is a private U.S. corporation providing a no-risk, third-party managed solution to effectively utilize the network's resident broadcast functionality. The company's technology functions as a gateway for messages from various governmental entities (Federal, State, and Local) and as a broker/alert aggregator for receiving emergency message inputs from authorized originators, for authenticating those messages, and for distributing messages to the various networks for distribution to customers located in the emergency alert target areas.

[2] Security and Accountability For Every Port Act of 2006 (SAFE Port Act), Pub.L. 109-347, Title VI-Commercial Mobile Service Alerts (WARN Act); *see* Notice of Proposed Rulemaking (NPRM); *The Commercial Mobile Alert System*, PS Docket No. 07-287; FCC Docket 07-214.

[3] NPRM, para. 51.

summary of the substantive discussion and requests for comments raised in the NPRM as

required by the NPRM.[4]

DISCUSSION

**6.   Technical standards, protocols, procedures and requirements that should be
adopted to facilitate the transmission of emergency alerts by CMS providers.**

The Commission seeks comment generally on the recommendations contained within the

CMSAAC report. The Commission specifically asked whether the CMSAAC recommendations

would satisfy the requirements of the WARN Act[5] and our goal of ensuring a robust, reliable and

effective CMAS that could be used to transmit emergency alerts, including to those with special

needs and those who do not speak English. The Commission seeks comment on the manner in

which each of the CMSAAC recommendations contributes to an effective, unified system for the

delivery of alerts over commercial mobile systems as envisioned by the WARN Act and whether

there are any alternatives. The Commission also seeks comment on whether the CMSAAC

recommendations presented an effective mechanism for alert originators at all levels of

government to initiate emergency alerts and whether these recommendations could be

implemented using a myriad of current and future technologies.

Section 602(a) of the WARN Act requires that the Commission adopt relevant technical

standards, protocols, procedures, and other technical requirements based on the

recommendations of the CMSAAC that will enable commercial mobile service alerting

capability for CMS providers that voluntarily elect to transmit emergency alerts. Unfortunately

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[4] *Id*

for the FCC the CMSAAC did not make all of the recommendations that they were required to make under the WARN Act.

Section 603(c) of the WARN Act required the CMSAAC to develop and submit to the Commission recommendations in seven areas, and in particular as addressed in our comments:

(1) for protocols, technical capabilities, and technical procedures through which electing commercial mobile service providers receive, verify, and transmit alerts to subscribers;

(2) for the establishment of technical standards for priority transmission of alerts by electing CMS providers;

(3) for relevant technical standards for devices and equipment and technologies used by electing CMS providers to transmit emergency alerts to subscribers;

(4) for the technical capability to transmit emergency alerts by electing CMS providers to subscribers in languages in addition to English, to the extent practicable and feasible;

. . . and

(7) as otherwise necessary to enable electing CMS providers to transmit emergency alerts to subscribers.

It is understood that the CMSACC and its working groups expended considerable time and effort during the one-year of its proceedings. While the CMSACC and its working groups addressed many of the technical issues required by the Section 603(c) of the WARN Act and obviously spent considerable time and effort, their Report,[6] while lengthy and apparently technical, does not clearly provide the required recommendations on which the Commission can adopt rules necessary to enable CMS alerting capability for CMS providers as required by

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[5] Section 602(a) of the WARN Act requires that the Commission adopt technical standards, protocols, procedures, and other technical requirements based on the recommendations of the CMSAAC that will enable commercial mobile service alerting capability for CMS providers that voluntarily elect to transmit emergency alerts.

Section 602. The CMSAAC report spends considerable time addressing issues which it was not required or directed to address. As addressed above, each of the recommendations (1), (2,), (3) and (4), of Section 603(c), relate only to requirements, standards, protocols, technical capabilities, technical procedures for the CMS provider (mobile carrier) for the receipt, verification, transmission by their networks and their equipment, to the handsets of their subscribers. However, this CMSAAC did not do.

CMSAAC spent considerable time and substance of their report addressing a CMAS network architecture for the creation, authentication, and transmission of alert messages via an infrastructure for origination and management of a CMAS system. While their efforts in these regards are not without warrant for consideration, CMSAAC addressed these ultra virus issues rather than addressing the other issues that were within their scope of responsibilities under Section 603(c). As just one example of this misdirection, it is not apparent as to how or why CMSAAC makes recommendations as to who provides the functionality of the alert aggregator and alert gateway functions, e.g., proposed to be a federal agency. While we do not disagree with the recommendation, such an issue and finding by CMSAAC is clearly not within their scope as defined by Section 603(c) as it has nothing to do with technical issues or requirements necessary to enable a CMS provider to transmit emergency alerts over their network. This is only one example of the many ultra virus issues addressed by CMSAAC that are easily apparent to any one possessing an understanding of the range of topics presented to the reader of the CMSAAC report. By addressing the many issues that were not within their scope, the CMSAAC failed to make critical and necessary recommendations for the timely implementation of a CMAS system as envisioned and directed by the WARN Act.

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[6] *The Commercial Mobile Alert Service Architecture and Requirements*, October 12, 2007.

With regard to the responsibilities under Section 603, the CMSAAC report, as recognized by the Commission in their NPRM, addresses the limitations of using existing implemented point-to-point SMS message broadcasting for CMAS alert message. While the CMSAAC report implicitly identifies cell broadcasting as the protocol, technical capability and standard for CMS provider delivery of emergency alerts, the CMSAAC report does not directly address the existence of the numerous cell broadcast standards, protocols, and capabilities of cell broadcast technology.[7]

As will be discussed in more detail in these comments, cell broadcast technology has been defined in mobile network equipment standards for nearly 10 years. The majority of the network equipment and many of the current mobile handset devices currently have the capability of supporting cell broadcast service for emergency message transport through the mobile networks using both CDMA and GSM. Additionally, cell broadcast standards, currently available software, network equipment, and handset devices have the ability for a CMS provider to receive, process, and transmit emergency messages over their networks such that CMAS can be provided in a timely and cost effective manner. Cell broadcast also is currently capable of supporting multiple languages and message priorities as these capabilities have already been defined by international standards. In some cases, specialized alerting can be provided by existing mobile devices through user or CMS provider provided programming or through software enhancements. In other cases, the development of features in the mobile devices by the mobile device manufacturers may be required. In either case, the currently available cell broadcast-enabled emergency alerting capability can provide for the receipt of specialized emergency alerting by those with special needs.

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[7] Cell broadcast is defined by GMS standards and SMS-CB is defined by CDMA standards. Both of these

For these, as well as other reasons, cell broadcast technology should have been addressed and recommended by CMSAAC as it is a currently available technology that can enable a CMS provider to receive, transport and deliver emergency alert messages using existing mobile carrier network infrastructure, and in many cases facilitate the receipt by existing subscriber handsets without requiring further technical development. However, the CMSAAC did not address this technology, and therefore failed to make the appropriate recommendations under Section 603(c).

Fortunately for the American public, the Commission has directly addressed cell broadcast capability in the NPRM, and therefore can adopt recommendations that can provide for the timely and cost effective implementation of CMAS.

As noted the Commission also requested comment on whether the CMSAAC recommendations contribute to an effective, unified CMAS and whether the CMSAAC recommendations present an effective mechanism for the various levels of government to initiate emergency alerts. While the CMSAAC report provides a general overview, it is our opinion that the proposed architectures on the left of the A, B, and C demarcation lines in Figure VII-1, (e.g., everything outside of the CMS providers network and purview), is very high level, and does not fully incorporate currently available technology and capabilities. As such, the recommendations in these areas are very limited, with some not being necessary. For example, as will be addressed herein, existing systems provide for a hierarchical system having an integrated Alert Aggregator and Alert Gateway functionality thereby making the definition of the B demarcation point unnecessary. The CMSAAC recommendations are a good start, but do not in and of themselves provide for a unified system and do not provide for the participation of all

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capabilities are generally referred herein as "cell broadcast."

stakeholders, including all levels of government. There are many instances that can be

addressed, but we will only address some key ones by way of example.

The CMSAAC model, as shown in Fig. VII-1 of the CMSAAC Report and provided

generally throughout, addresses an alert aggregator and alert gateway singularly. However, this

is not necessary and in fact may not provide for an effective unified infrastructure. The CMAS

model and supporting infrastructure can be viewed similarly to network devices such as the well

known CCS7 network architecture. Alert aggregators and alert gateways as currently available,

for example the CellCast Gateway[TM],[8] can be implemented in a hierarchical manner similar to

the legacy public switched telephone network, but including fully redundant communications

links and processing systems. Multiple Alerting Interfaces (which are currently implemented in

existing and available Alert Aggregators) are provided via secure Web Pages. Alert Aggregators

and Alert Gateways can be physically or logically implemented on a city, justice of the peace,

county, state, region and national basis and coupled using fully redundant communications

facilities. Each Alert Aggregator and Alert Gateway can be programmed with the functionality

necessary to support local authentication of message originators, message content, message class,

message priority, and valid message target areas. The functionality of each one of the multiple

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[8] The CellCast Gateway[TM] (also referred to as the Cell Broadcast Broker[TM]) enables a message to be delivered to every activated handset of every subscribing mobile carrier in a designated target area for that message. The emergency manager working in a time-critical environment does not need to issue separate commands to reach handsets served by different carriers. Additionally, all handsets within the target area for a particular message will receive the message, regardless of whether they are a subscriber to the local subscribing broadcasting mobile carrier. The CellCast Gateway[TM] is responsible for checking the "authenticity" of the content providers, or message senders, assuring that the telecommunications link from the police headquarters or government institution is secure and that the originating terminal and user are authorized to send a message. It scrutinizes the proposed message against national law, local jurisdiction, local mutual agreements, and contracts with the cellular networks affected. Any activity on the system, success or fail, is reported to the stakeholders by the CellCast Gateway[TM]. Without this, separate alerts must be sent with special instructions according to the unique parameters of each wireless carrier, increasing the opportunity for error and delay and significantly reducing the ability to reach those who are visitors to an area. The CellCast Gateway[TM] has been publicly demonstrated for several years to various agencies and parties and has been used to provide alert message delivery over the Einstein Wireless network in Wisconsin for over 18 months.

Alert Gateways (whether physically or logically separate) is implemented in software to provide

the hierarchical message authentication and processing necessary for each level, (local, state,

regional, or national) and possible integration into multinational systems as may be desirable

with Canada and Mexico, for example. Each level of Alert Aggregator/Alert Gateway processes

messages upward and downward to other levels to ensure delivery to the various CMS providers,

or other emergency alert message delivery systems and providers and to provide for desired

message recording, quality control, and administration. Such systems are also transport

technology independent and can pass on received and authenticated alert messages to peer

systems such as EAS, and to different alert transport systems, e.g., Wi-Fi systems configured to

receive and process broadcast messages.

Current technology and products can support a hierarchical CMAS system as described

herein. Any technical or practical issues addressed by the CMSAAC will generally be addressed

between various participants through trust protocol boards, or other mechanisms. There is no

known technical requirement to limit deployment or functionality as reported by the CMSAAC.

In fact, we believe, as will be addressed below, that some of the CMSAAC recommendations can

actually result in opportunities for CMAS system failure. For example, there is no known

technical reason, and it is not made clear by the report, for the CMSAAC recommendation that

all levels of messages be submitted by all levels of message originators at all levels to a single

Alert Aggregator. This recommendation, as described above, is not technically required, and as

will be described below, creates an unnecessary message processing choke point and single point

of failure, even if fully redundant and fully backed up.

Finally, the Alert Aggregator and Alert Gateway systems and functionalities as described

in the CMSAAC recommendation, as noted, are currently available and have been for several

years. Much of the subject matter of the CMSAAC report in this regard has been published over

the last 2 to 3 years by CellCast and others, including in system publications, on the Web, in

response to requests for information and proposals, at trade and technical conferences, and

international standards meetings. However, the CMSAAC report did not recognize any of this

prior work, existing systems, products, services, and technology. As such, the CMSAAC Report

does not provide recommendations that can be implemented with currently available technology

for providing the American public with a timely CMAS solution.

8.   Specification of the availability of transport technologies now and in the future for the transmission of alerts over the CMAS.

The Commission seeks comment on the availability of technologies now and in the future

for the transmission of alerts over the CMAS. In this regard, the Commission asked for

comment on point-to-point and point-to multipoint technologies for providing a viable solution

for a national CMAS.

We agree with the CMSAAC finding that a point-to-point' technology, such as SMS, is

not upwardly scalable because of the way SMS messages are transmitted and processed by the

networks, and the way in which the mobile devices behave while in idle mode.[9] The CMS

networks process SMS messages individually for each targeted mobile device and as such the

transport systems and the bandwidth become critical limitations on SMS or any other point to

point transport technology. Also, a mobile device must spend as much time as possible using

very few resources in order to conserve battery power. Accordingly, a mobile device spends

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[9] As noted in the NPRM, the CMSAAC raised concerns regarding the viability of point-to-point solutions for a national alerting system and whether current generation point-to-point services such as short message service (SMS) can be used to efficiently alert large populations of people within a short time frame.

most of its time in deep sleep while in idle mode or when no call is being made or is in progress

(the on hook state). For SMS message delivery, periodically the mobile device wakes up and

checks the paging service channel to see if it has been paged. If not then it goes back into deep

sleep. In order to send traffic to the mobile device, the mobile device must be paged. The mobile

device replies to the SMS page and completes an authentication procedure before receiving the

traffic including ciphering of the service channel. For each and every network device, this

involves SS7 signaling to a 'Mobility Management Subsystem",[10] and signaling to all of the base

stations in the paging area, which is the area where the mobile device was last known to be

present.[11]

In order to send a very large number of SMS messages at one time, the required mobility

management signaling would overload the system. In addition, it is not easy to determine the

location of the mobile device to any better granularity than the location area to which it is

registered in the VLR.[12] Since this area may be relatively large, it is less advantageous than cell

broadcast.

Additionally, the limitation on the transmission bandwidth capability is well known to

many mobile phone users, and is quickly experienced with SMS dedicated transport or broadcast

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[10] Such CMS provider subsystems include, but are not limited to systems commonly known as Gateway Mobile
Services Switching Center (GMSC), Home Location Register (HLR), Mobile Switching Center (MSC), Visitor
Location Register (VLR), and a Base Station Controller (BSC).

[11] In order not to overload the Visitor Location Register (VLR), a mobile device does not report its position every
time it changes its cell. Rather hundreds of cells are grouped together in 'location areas' and the mobile only reports
when it changes 'location area'. A location area is about the size of a county and has about 100 cells in it. It is the
smallest area that the mobile is known to be in, without paging it. Location areas are dimensioned for technical
reasons and so do not necessarily correspond to political borders. To modify a paging area to make it fit a political
jurisdiction may cause significant impacts on the network efficiency.

[12] This would appear to be the basis of the CMSAAC recommendation on geographical granularity, which is a
limitation of SMS message delivery, and is not a limitation of SMS. This is an example of an SMS limitation
imported to the CMAS recommendations that is not technically required by a Cell Broadcast solution.

channels when SMS is used to transmit a relatively modest number of SMS alert messages at a

time.[13]

In contrast, cell broadcast implementations utilize a Cell Broadcast Center (CBC) that

provides for selection of the broadcast area on a per cell site basis. With cell broadcast

technology, the resolution to the cell level can be done passively, which is important during

emergencies when all elements and signaling channels are overloaded.

While not addressed in the CMSAAC report, cell broadcast standards for CMS provider

receipt, processing and transmission of alert messages are well known and products and services

implementing those standards are currently available. Both GSM and CDMA standards for cell

broadcasting have been approved for several years.[14] The manufacturers of the BSC network

equipment deployed by the CMS providers have already developed and implemented cell

broadcast capability in their equipment, in part to ensure their compliance with the GSM and

CDMA standards. Generally, each of the BSC manufacturers include most, if not all, software

features in each product they sell and deliver to the CMS providers. However, the equipment

suppliers may not activate and turn on the particular feature and capability until the CMS

provider requests and pays for it.[15] The degree of effort and associated capacity engineering

issues and implications necessary to activate the resident cell broadcast feature in the CMS

provider's networks must be determined by the supplier and the CMS providers and should have

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[13] SMS congestion has been experience on several private systems, such on university implementations, based on
SMS implementations.
[14] These include, ETSI TS 123 041 V6.2.0 (2003-12), 3GPP TS 23.041 version 6.2.0 Release
6) in respect to GSM and UMTS, and TIA/EIA/IS-824 in respect to IS95 CDMA.
[15] Admittedly, paying for and activating an incremental software feature in a network switch can entail other
capacity engineering issues and costs. Again, these are the type of technical issues that should have been addressed
by CMSAAC, but were not.

been address by the CMSAAC.[16] However, based on the trials of emergency message alerting

using cell broadcast, there is very little, if any, negative impact on the CMS provider's network

equipment, network design, and/or network capacity.[17] It is our recommendation that the

Commission specifically request the CMS providers to provide details on the costs and time lines

for activation of cell broadcast functionality in their networks.

Similarly, mobile device manufacturers have already implemented GSM and CDMA

standard compliant features in their products, including the ability to receive and display cell

broadcast alert messages. The cell broadcast feature has been generally suppressed and hidden

by the mobile device manufacturers in the U.S. at the request of the CMS providers. This has

been in part due to their desire to only present to their subscribers features that they support so as

to not confuse them. The menu structures are typically limited by the CMS provider to only

display supported features and functions. However, the software resident in the mobile devices

can either be directly activated or can be activated by replacing the SIM chip with a SIM chip

having cell broadcast enabled. We have not yet performed an extensive market survey of all

mobile devices available in the U.S. by all CMS providers, however, in recent trials of cell

broadcast enabled emergency alerting at Einstein Wireless in Wisconsin, Einstein Wireless was

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[16] The only upgrades required by the CMS providers are related to the implementation or participation in a shared
CBC and the activation of the cell broadcast feature currently resident in their BSCs. There is no software or other
requirements of the CMS networks including no hardware or software modification or upgrade to the MSC switches.
Unlike SMS, cell broadcast messaging is not processed through the MSC. Cell broadcast is only a feature of the
base station (BTS) which is administered by the Base Station Controller (BSC). However, in some networks, a new
interface may be desired. For example, a new single point of entry to the CMS network through the CMS provider
Network Operations Center (NOC) may be desired by the CMS provider for alert message reception and transport to
each BSC. For example in Ericsson based systems, this may be a new interface through the TEMS system, or in
many cases a company designed propriety operations system. Accordingly in most cases it will not be necessary to
install many IP links, satellite dishes or CBCs at each BSC, but one per NOC. However, test and trial systems did
not require such single point of entry and have worked well in the receipt and delivery of cell broadcast messages
through CMS networks. This would not be so, only if the network is very small and does not have a NOC system.
In any case it is still likely that a single point of entry can be engineered from the MSC site (but not via the MSC).
[17] For example, see the Einstein Wireless Emergency Alert System Trial in Wisconsin described at
http://www.einsteinpcs.com/airadigm/emergency+alert+system/default.asp

able to provide users with the necessary instructions to receive emergency alerts using their

existing handsets.[18] In fact, recently a Blackberry[TM] mobile handset was purchased of the shelf

from T-Mobile.[TM] This mobile device not only had the cell broadcast feature present and

visible,[19] the mobile device allowed for the selection of a particular cell broadcast alert language

from a list of many different languages, as provided by an assigned Message Indicators (MIs).

This is also explained in the recent Blackberry User guide that describes activating cell broadcast

and selecting the language preference for receiving cell broadcast message.[20] In addition, during

a recent trip to an AT&T Wireless storefront we found that nearly every mobile handset on

display was configured with the cell broadcast feature enabled. For such mobile handsets, the

only remaining steps required for a customer to receive cell broadcast messages (once AT&T

activated the feature in their network) would be scroll through the menus on the mobile device to

activate the feature and to input the desired alerting message identifiers or service indicators. It

is difficult for us to understand why the CMSAAC did not provide recommendations on the

current capabilities of cell broadcast technology that can so easily and quickly provide U.S.

customers with the benefits or receiving emergency alert messages in a timely manner as

provided for the WARN Act.

As cell broadcast technology and functionality is currently available, we recommend the

Commission adopt rules that require the implementation of cell broadcast functionality for the

support of CMS emergency alerting under the WARN Act. We also recommend the

Commission request that the CMS providers provide an analysis of their ability to support, in a

timely manner, the receipt, transport, and transmission of emergency alert messages using cell

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[18] *See* http://www.einsteinpcs.com/resources/einstemergencyalertsetup.pdf
[19] *See* for example, http://blackberryforums.pinstack.com/8676-cell_broadcast.html

broadcast technology and the activation of cell broadcast functionality in existing mobile handsets.

As to the future, we recommend the focus of the Commission be towards the adoption of rules that can provide for the timely implementation of CMAS within the U.S. and in particular alerting with cell broadcast messaging. We support, however, the ongoing review and assessment associated with developing future technologies that can provide for enhanced emergency alerting, such as through multimedia broadcasting. This can include emergency alerting using multimedia broadcast capability that can include broadcasting of maps, video clips, audio clips, still pictures, and graphics, for example. However, the standards for multimedia broadcast capability are still being defined by international standards organizations.[21] These efforts are being attended and supported by U.S. industry including representatives from the major CMS providers. It is our recommendation that the Commission revisit the emerging standards and technologies during their two year review.

9. __Point-to-multipoint technologies such as cell broadcast provide the only viable currently available transport solution for alerts transmitted over the CMAS.__

The Commission seeks comment as to whether point-to-multipoint technologies such as cell broadcast provide a viable transport solution for alerts transmitted over the CMAS and whether further development is necessary to use cell broadcasting for the CMAS. The Commission also asked whether there are significant differences in how cell broadcasting services are different for CDMA or GSM systems. Finally, the Commission seeks comments as to whether current mobile devices were capable of receiving cell broadcast alerts.

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[20] *See Blackberry Wireless Handheld Version 4.1 User Guide* at
http://uis.georgetown.edu/hardware/blackberry/8700userguide.pdf

As noted above, and implicitly recommended in the CMSAAC Report, point-to-

multipoint technologies are the only viable transport solution for delivery of alerts to the masses.

As known to those in the industry, the only currently deployed 'point to multipoint' system for

GSM is cell broadcast[22] and the only available point to multipoint for CDMA is SMS-Cell

Broadcasting (SMS-CB).[23]

As also addressed above, the cell broadcast capability has been defined in standards and

implemented in network equipment and handsets for a number of years. However, the CMS

providers in the U.S.[24] have not activated or utilized the cell broadcast capability and therefore,

currently have limited experience and understanding of cell broadcast functionality and services,

and in particular, the costs and impacts on their networks. From the CMS providers perspective

it could be viewed as not being tested, even though those CMS providers in the U.S., such as

Einstein Wireless in Wisconsin, and in other countries (that buy the same network equipment

and handsets from the same manufacturers), have found that implementation of cell broadcast

has little to no impact on their networks. Even though the CMS providers have not tested it, the

manufacturers who participated in the standards development and who have implemented

standards compliant equipment have surely fully tested it and are confident in their

implementation of the functionality in their software and hardware systems.[25] The CMS

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[21] See Multimedia Broadcast Multicast Service.

[22] In August 2004, the Dutch Government launched a project to build the world's first government-sponsored mobile alert system based on cell broadcast (CB) technology, using GSM technology. The mobile alert system will allow the Government to provide instructions (in case of natural disasters, accidents, smog alerts, etc) to citizens in a specific location or area.

[23] Cell broadcast capability has been available for over 10 years and is stable on the network side. The software to operate the feature is normally resident in the BSC and BTS software, as provided in software upgrades from the vendors. However, as noted, the CMS providers have not purchased or activated it.

[24] CMS providers in other countries have activated cell broadcast service for various service capabilities including emergency alert messaging.

[25] Manufacturers of the BSC purchased and installed by the CMS providers develop their software in generic releases. The BSC software is complicated, but is written to seamlessly integrate all functionality as defined in the

providers will need to implement field trials to satisfy their engineering and management that the

vendor implementations are workable and to determine full system deployment costs, required

timeframes and network impact issues.[26] However, these are all administrative and business

issues and do not render cell broadcast functionality as being unavailable to begin providing

great benefits for American citizens.

As provided by cell broadcast standards and implementations, once the mobile handset

has the cell broadcast feature activated, the mobile handset wakes up its receiver to check on an

additional channel called the cell broadcast channel (CBCH). This causes a small extra drain on

the battery, but studies have shown that the effect is very small in most cases.[27] Each "page" of

the network provided signals begins with a 16-bit identifier called the 'message identifier' (MI).

If the mobile device has not been configured for receiving the particular MI of transmitted

messages, the mobile device immediately goes back to sleep. An MI does not address individual

mobile devices but can be thought of as being similar to the 'port number' in an Internet Protocol

datagram.

This process is completely passive on the part of the network and the mobile device as

there is no paging load and no signaling back from the mobile device, e.g., in cell broadcast the

mobile device acts like a passive receiver. As defined and implemented, cell broadcast inherently

standards, and also include manufacture specific design choices and options. The BSC manufacturers typically also participate in the standards development and are verifying the functionality in systems in parallel with the standards development.

[26] Typically, a CMS provider will have to allocate funding for a network trial, solicit bids or quotes from their equipment suppliers including the installation of one or more cell broadcast centers (CBCs) at the edge of their network as a cell broadcast internetwork interface with their network (identified as demarcation point "C" in the CMSAAC Report), to the CMS infrastructure, and verify network and channel capacities, and prepare a full deployment business plan including timeframes, costs and revenues to determine financial returns for their shareholders,

[27] Contrary to the CMSAAC report and the study relied on in that report, the battery drain on mobile devices due to activation of cell broadcast is very small. Based on experiences in the Einstein Wireless cell broadcast-enabled emergency alerting trial, there have been no reported negative impacts on battery life or talk time.

prevents overload of the random access channel and also prevents overload of the mobility

management and authentication systems of the CMS providers.

In the international standard, IS95 for CDMA, there is a similar facility called SMS-CB

(SMS cell broadcast). The SMS-CB is carried on the paging channel. It also has a 16 bit code

analogous to the GSM MI code, but is referred to as the Service Category (SC). Like GSM CB,

the SMS-CB in CDMA is also passive and so is suitable for high level scalability. The standards

documents for SMS-CB mention in the footnotes that public warnings would be a good example

of an application for it. Channel 1 of the SMS-CB has been suggested, but not yet adopted, as

the emergency channel.[28]

Accordingly, GSM cell broadcast and SMS-CB are the only present day commercial

mobile bearer services that are scalable to the point of being useful for the purpose of mass

public alerting.

In order to activate the cell broadcast feature in their switches, the CMS providers may

have to pay the BSC manufacturer for a license to use this additional software feature.

Activation of such features typically only requires a software code, like a password, to activate a

feature in their BSCs. The CMS provider can then enter the software activation code from their

network operations center. Activation of the cell broadcast feature and capability in a CMS BSC

does not require any additional software, hardware or require site visits to the switch. The

systems are designed such that when the switch activates the cell broadcast feature, the base

station controllers (BSC) associated with each switch automatically configures the logical

channel structure to provide cell broadcast transmission.

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[28] The designation of the available channels as provided by the standards is another example of a technical standard and protocol that should have been addressed by the CMSAAC recommendations under Section 603(c) of the WARN Act, but was not.

In GSM network equipment, this operation removes one SDCCH sub channel and configures it for cell broadcast use either on a dedicated or dynamic basis. Normally, this makes about a 2% change in the SDCCH/TCH ratio, but in most cases it is still well within acceptable limits. In initial tests and trials, there has been no significant change in control signaling latency. However, in some cases it may be necessary to configure an additional traffic channel for signaling purposes if the SDCCH/TCH ratio is found to be unacceptable. Alternatively, features such as Dynamic Configuration of Control channels or Immediate Assignment on Traffic Channel can also mitigate any problem without recourse to the loss of a traffic channel.

In CDMA, the SMS-CB channel is carried on the paging channel and therefore there is no loss of signaling capacity when implementing cell broadcast in CDMA network equipment.

With regard to mobile devices, implementation of the cell broadcast feature has generally been left to the manufacturer's interpretation. As such, there are a variety of implementations of cell broadcast for mobile handsets. It has been our experience that some mobile devices do not behave very well and some, in fact, perform so poorly that we have recommended that the mobile customer should not activate it or use it for cell broadcast message reception.[29] However, many others provide excellent support for cell broadcast message reception. As CB is widely deployed manufactures of mobile handsets will make safety improvements desired by subscribers.

However, as with other features in mobile devices, there is no consistency even within the same vendor as to performance and menu structure. Generally, CMS providers and mobile device customers must learn the specifics for defining the many options of their mobile devices. We do not see that this will be any different for cell broadcast emergency alerting services.

In the future, as noted above, the cell broadcast standards and implementation may eventually be

supplemented and later superseded by the evolving Multi Media Broadcast Multicast (MMBM)

standards in 3G. However, MMBS has not yet been fully defined and therefore deployment of

MMBS is an unknown number of years away. In addition, it may be many years before the

penetration of MMBS supersedes cell broadcast so as to make it obsolete. As such, the CMS

provider's investment in cell broadcast technology will have a useful life of at least 10 years.

10.   The broadcast distribution model similar to that used to distribute EAS is consistent with the WARN Act and with CMAS.

The Commission seeks comment on whether a broadcast distribution model similar to

that used to distribute EAS is consistent with the WARN Act and the CMAS. An in particular,

the Commission asked whether radio data systems like the Radio Broadcast Data System

(RBDS) would meet our goals for efficient delivery of alerts over the CMAS. The Commission

also requested comment regarding emerging wireless broadcast technologies such as MediaFLO

and DVB-H and requested a discussion concerning the broad range of devices intended to utilize

the CMAS and potential impact on the subscriber service experience.

It is our opinion that Radio Broadcast Data System (RBDS) would not meet the

Commission's goals for efficient delivery of alerts over the CMAS. As envisioned by the

WARN Act and governments around the world, the proliferation of mobile service and mobile

devices creates a prime opportunity for enabling emergency message alerting to the masses.

RBDS does provide a similar capability and would also require considerable investment, but

would provide less coverage and reduced granularity of message delivery.

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[29] The Dutch government trial system has addressed the issue of mobile device capability and performance and has

MediaFLO and DVB-H are also passive modes which do not add to paging load. They

are suitable for mass scale alerting. However these systems typically require mobile devices that

have the supporting hardware and software resident with the mobile devices. The availability of

these types of systems is very low. MediaFLO base stations are separate physical hardware and

utilize separate spectrum. Additionally, the implementation of MediaFLO utilizes larger cells

than existing CMS provider networks and therefore message delivery using such systems is not

as granular as that provided by cell broadcast over CMS provider networks. As such, in terms of

reaching the public these technologies are less useful to for emergency alerting.

11.   <u>A higher layer protocol is not required for CMAS implementation.</u>

The Commission seeks comment on whether a higher layer protocol is necessary for

CMAS as suggested by the CMSAAC for carrying meta-data (administrative information) with

the alert message, and sending authentication and authorization data to the alert's originator. The

Commission also seeks comment on how point-to-point, point-to-multi point and broadcast

models could carry this information and provide the recommended authentication information

and whether there were any alternative methods for transmitting this administrative data.

Cell broadcast capability in the GMS and CDMA standards and implementations have

limitations as to how much data they can carry. As will be addressed below with regard to Item

15, it appears that two pages of 180 characters is a sensible design objective sufficient to provide

the user with the required alert information. As such, it is our view that it would be inappropriate

to transmit a large metadata file using cell broadcast. As addressed in other sections, the alert

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published details about mobile device behavior on a government website (in Dutch).

gateway and alert aggregators can utilize CAP for their administration purposes. However, there

is no technical or administrative requirement to transmit the full CAP message to the mobile

handset. Current systems, demonstrations and trials have provided transmission of a stripped

down 160-character 'text message,' which is transported through the CMS provider's network

and transmitted over the CB bearer to the mobile devices. In the future, when MMBM standards

are finalized, this limitation will not apply and it will be practical to transmit CAP or speech, still

images, or video files.

Additionally, existing systems implementing the alerting interface domains for

emergency alert message originators, alert aggregators and alert gateways, have implemented all

necessary CMAS functionality, including the functionalities as defined by the CMSAAC.[30]

Utilizing existing alert aggregator, alert gateway and cell broadcast center (CBC)[31] systems,[32]

CMAS can be implemented and fully supported by all participants without any further

development or the use of a higher level protocol as suggested by the CMSAAC report.

Technically, development of a higher level protocol is not required for support and

implementation of CMAS by governments or by the CMS providers.

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[30] The CMSAAC spent consider time on these even though it was not within their scope as defined by Section 603(c) of the WARN Act.

[31] The network functionality, capabilities, availability for emergency message processing for support of CNAS was not addressed by the CMSAAC even though these systems are available from multiple manufacturers.

[32] CBC refers to a 'cell broadcast center' which is a network component currently available from various manufacturers including: Logica, Omintel, TeleDNA, and CellTick.

12.   <u>**We recommend the Federal Government provide a national framework for national CMAS that includes interoperability with state, local and private emergency alerting systems.**</u>

The Commission seeks comment with regard to the appropriate role of the Federal Government in managing the CMAS.[33] The Commission seeks comment on the CMSAAC recommendations that the Federal Government fulfill the "alert aggregator" role in the CMAS. In particular, comment was sought whether it was necessary and desirable for a Federal government entity to assume these roles, and if so, what Federal government entity would be appropriate. Also, comment was sought with regard to whether a private sector entity could fulfill these roles either independently or pursuant to delegated authority by a Federal government entity arrangement, similar to the one used by the Justice Department regarding Amber Alerts.

As addressed above, a CMAS architecture using standard CAP protocols can be implemented today on a hierarchical basis using existing alert aggregator and alert gateway equipment. As such, each and every government entity can provide emergency alerting services to their constituents. The Federal Government can provide a national framework for a nationally integrated CMAS, recognizing such should enable, not impede, the state and local governments from providing emergency services as they may require. This national framework can include the necessary administrative and technical interfacing with other national systems and functions including the Justice Departments Amber Alerts services, EAS, and FEMA.

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[33] The CMSAAC recommended that a Federal Government entity fulfill the roles of "Alert Aggregator" which would include receiving, accumulating and authenticating alerts originated by authorized alert initiators using the Common Alert Protocol (CAP)). As proposed by the CMSAAC, the Federal Government managed "Alert Gateway" would formulate an alert based on key fields in the CAP alert sent by the alert initiator and transmit the alert to corresponding gateways operated by each CMS provider.

A hierarchical distributed alert aggregator and alert gateway system, however, is preferred over a centralized system. Cities, counties and states will have their own requirements for serving their citizens. Those systems can provide local services that are specific to their serving area and do not need to interface or have their messages aggregated onto the Federal system. For example, some cities may want to issue traffic alerts, fire alerts, tornado alerts, beach condition alerts to portions of their communities. These can be handled locally and do not need to be aggregated. Any required alert messages can be shared logically between interconnected alert aggregators and/or alert gateways through distributed processing and messaging to both higher and lower level systems within the tiered hierarchy.

Similarly, while the Federal Government can play a role in providing a framework, the ownership or operation of the alert aggregator and alert gateway systems, including the hosting and administration of the alerting interface domain, is not required to be the Federal Government. It is our recommendation that a Federal Government entity be empowered and funded by Congress to implement a national interstate network for providing national level emergency alert message processing. This can include state and/or regional alert aggregators and alert gateways for processing national level alerts and for sharing interstate emergency alerts, for example, between bordering state systems. Each state can decide on its own system or can opt into a federal supported system. Local communities can do the same. Each interconnecting alert gateway or alert aggregator, at the various levels within the hierarchical structure can use the CAP protocol for communicating messages, obtaining authentication of messages, etc, as may be defined in procedures established at the local, state and national levels, such as by trust protocol boards.

13.   A national aggregator is not required for CMAS implementation, either at the National level, or at the State or local levels.

The Commission seeks comment regarding the CMSAAC recommendation that all alerts, whether national or local, would be funneled through an aggregator. Comment was also sought on whether a centralized system is best positioned to accomplish the goals of the CMAS as envisioned by the WARN Act and whether the centralized system would the run the risk of creating a single point of failure. The Commission also seeks comment on the government alerting system capability to: a) support the aggregation of alerts from emergency agencies down to county and municipal levels, b) distribute alerts to a diverse range of potential alerting systems, and c) interact and determine the status of such connected alerting systems. The Commission asked about the role of state emergency agencies in such a scheme and whether the aggregator concept be expanded to include state and county emergency agencies, such as state and county emergency operations centers (EOCs). The Commission also seeks comment about what equipment or security issues might be involved in expanding the scope of the system. Comment was also sought as to the criteria that should be established for determining the appropriateness of connecting an agency and what responsibilities should be attendant on connected agencies?

Our above comments have addressed the availability and benefits of a distributed hierarchical alert messaging infrastructure and will not be repeated here. Distributed messaging and processing systems are well known and preferred by the information technology community over aggregated central processing systems. The Internet would not be possible if it had been implemented as a centralized processing system, the problems of which were well known in the

early days of computer processing with time shared systems. These generally no longer exist for

a reason.

A centralized alert aggregator has numerous technical, administrative and political

problems.[34] From a logical view, a CMS provider may want a single connection to a server from

which it can guarantee the authenticity of messages, because maintaining relationships with

dozens of sheriffs may be viewed as problematic. However, this is not a technical concern. The

implementation of the systems for the alert aggregator and the alert gateway include software for

hosting the alerting user interfaces, providing authentication of messages and message target

areas, and processing of the messages for delivery to the CMS providers. This delivery can be

through a CBC as described above, which can be either owned by the CMS provider or can be

shared by multiple CMS providers, such as through a consortium as provides shared 800

Database services to multiple carriers.

For example, from a political point of view, aggregation at the federal level is often not

desirable and may not be within the purview of the federal government. Such a federal system

could easily overshadow the local robust grass roots driven community model that requires local

accountability, and state level jurisdiction.[35] It has been our experience working with city and

county emergency management staffs and local sheriffs and mayors that any Federal

Government system must provide them local flexibility.

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[34] We again note that the CMSAAC's addressing of and recommendations to the alert messaging infrastructure of the alert aggregator and the alert gateway was not within the scope of Section 603(c). While it is understandable that an understanding of a message creation and delivery model was desirable, these recommendation were not related to technical standards or protocols required for a CMA provider to offer emergency alert message delivery if they so chose to do so.

[35] We do comment this further, but note that the Commission's counsel should consider the WARN Act in view of Federal Authority under the Commerce Clause before adopting rules relative to State implementations.

From the network operations point of view there should indeed be a single server to serve

the jurisdictional areas that the network services, so that there should be no onerous obligations

put on the network to administer the access accounts of individual senders: for example, one

aggregator per state. On the alert aggregator side it does matter that each account is properly

administered, but there is a choice as to whether these tasks are performed in one master server

or in a distributed fashion.

14.   <u>**We recommend adoption of the Common Alerting Protocol (CAP) as the basic**</u>
           <u>**alerting protocol from the alert initiator to the alert gateway.**</u>

The Commission seeks comment on the CMSAAC's recommendation that the CMAS

use CAP as the basic alerting protocol from the alert initiator to the alert gateway. In particular,

the Commission asked whether CAP could be used as a general, system-wide CMAS interface,

as they did for EAS,[36] whether CAP is currently practicable in the context of CMAS, and

whether CAP could be implemented in a timely manner for implementation of CMAS. The

Commission also requested comment as to whether CAP would promote transparency in CMAS

implementations.

Since the adoption of standards for CAP1.0 in 2004 and CAP1.1 in 2005, those standards

have been widely adopted as a standard protocol by organizations both in the US and

internationally. These have included governmental agencies (the U.S. Department of Homeland

Security, the U.S. National Weather Service, the U.S. Geological Survey); foreign governments

(the Canadian Government for their 'CANALERT' system, the Sri Lankan Government, the

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[36] As noted by the Commission in the NPRM, the Commission mandated the use of CAP in their EAS Second
Report and Order due to the conclusion that the use of CAP would provide specific benefits to the evolving EAS.

International Telecommunications Union (I.T.U.), and the European Union); and numerous

private entities (CellCast, Hormann, MyState USA, Warning Systems Inc, IEM Inc, SpectraRep,

and Swan Island Networks, to name only a few).

As such we would agree that it is an ideal standard for a CMAS alerting protocol.

Because of its wide adoption and availability, there should be minimal delay in its

introduction by CMAS participants. If it is found that the information provided by the CAP

message is insufficient for a particular purpose, CAP messaging can also be encapsulated as a

payload for another higher level protocol. As noted above, we do not believe that such a higher

level protocol is required. However, if such is found to be needed, the CAP protocol is still

applicable and usable for what it does provide.

Also, CAP is a widely understood and used protocol for the transport of alert messages

and therefore its adoption for CMAS by the Commission would ensure transparency, ease of

interoperability and connection to existing systems.

15.   A character limit for alerts transmitted over the CMAS is not required but can be considered for initial implementations.

The Commission seeks comment on whether they should adopt a character limit for alerts

transmitted over the CMAS as suggested by the CMSAAC.[37] The Commission also sought

detailed technical explanation with regard to whether or not a character limit was required. In

particular, the Commission requested an explanation regarding the relationship between

"payload" and "displayable message size" as referenced in the CMSAAC's recommendations.

As indicated by the Commission, the use of CAP will ensure that diverse alert systems and technologies can
participate within a common, transparent framework.

Cell broadcast capability in the GMS and CDMA standards and implementations have

limitations as to how much data they can carry. The theoretical limit for cell broadcast is 15

concatenated pages of 90 characters each, which is 1350 characters of text. However, bearing in

mind the very small display screen on a mobile device and the fact that each frame takes 1.8

seconds to transmit from the CMS providers network to the mobile device, we recommend that

an alert message of two pages per message for a total of 180 characters be adopted as the

standard for initial CMAS service.[38] The CMSAAC apparently came up with 90 as an

appropriate technical standard, which appears to provide the first two characters for a two

character language identifier.[39] As a 90 character message will likely be insufficient in many

cases to convey not only the emergency [40] as well as the action to be taken, we recommend the

Commission establish 180 characters or two pages as the maximum length message for initial

implementations, minus the four characters reserved for the language identifiers.

16.   Classification of national level emergency alerts is not necessary.

The Commission seeks comment on the CMSAAC's recommendation that there be three

classes of Commercial Mobile Alerts: Presidential-level, Imminent threat to life[41] and property;

and Child Abduction Emergency or "AMBER Alert" Service. The Commission also seeks

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[37] As noted in the NPRM, the CMSAAC recommended that, at least initially, the technical limit of any CMAS alert should be 90 characters of text.

[38] In should noted, that Einstein Wireless has used a 160 characters alert message for their trial due at least in part to their experience with the 160-character mobile handset support of SMS point to point messaging.

[39] The CMSAAC reservation of the first two characters for a language identifier is strange in view of CMSAAC's failure to address how cell broadcast can support multiple languages.

[40] For example, a 90 character message such as "The NWS has issued a tornado watch for St. Charles and St. Louis counties. Please seek shelt," or similar length message is insufficient to convey to a person the emergency and the action that needs to be taken.

comment as to the CMSAAC's recommended definitions of each term and whether the proposed

definition was sufficient to set a proper threshold for the class of alerts that should be transmitted

using the CMAS.

As an initial matter, contrary to the CMSAAC assessment and recommendation, there is

no technical requirement or limitation for limiting the number of classes of alerts to anything as

few as three. Generally, there is no limit as to the number of different classes of alerts that can

be originated, processed, and transported by message broadcast systems and technologies that are

currently available for immediate implementation of CMAS using cell broadcast transport

service. Rather, there are administrative and business issues and concerns that may be present.

As discussed herein, the alert message originator creates the message through a secure GUI

interface that can be one of many currently available web-based systems that support CAP. The

alert aggregator and alert gateways are computer processing systems that are programmed with

computer software and can technically handle an unlimited number of different message classes,

types and content. The CBC generally receives, processes, and forwards the alert messages for

transmission by the CMS provider's BSC equipment to the mobile handsets transparent to the

class of message sent. The type of alert message and message classifications are transparent to

the CMS providers message processing and transport and therefore is not a technical standard or

protocol requiring specification or recommendation under Section 603(c) or under Section

602(a) of the WARN Act. As such, we recommend the Commission not adopt standards in this

regard.

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[41] The CMSAAC recommended definition of "Imminent threat to life and property" was "alerts where the CAP severity equals Extreme or Severe, CAP urgency is immediate or expected, and CAP certainty is observed or likely."

CellCast has considered the administrative and practical application of emergency alert processing in its trials and discussions with local city, county, state and federal disaster communications managers during the last several years. We have developed and proposed technical solutions that can provide for a limited, but rather large number, of dedicated Message Identifiers (MI) or Service Categories (SC) for message addressing, processing, and delivery. The processing of these is performed by the alert aggregator, alert gateway and the mobile handset and is independent of the CMS provider's transport network. And as such, these were not within the scope of the CMSAAC under Section 603(c) of the WARN Act.

What has been proposed and is under consideration in the ITU is an allocation of cell Message Indicators (MIs) for particular purposes. This has included the grouping of such MIs into three classes.[42] While the proposed framework has not been finalized or approved, the mobile handset manufacturers are currently offering mobile handsets implementing the proposed framework including the tentatively assigned MIs.[43] As shown in the proposed framework as referenced hereto as Schedule 1,[44] advisory messages have been assigned to the MIs block from 800-899. As examples, a maritime advisory is assigned to MI 801, an aeronautical advisory is assigned to Message Indicator (MI) 802, an English language public advisory is assigned to MI 821, and a Spanish language public advisory is assigned to MI 822. Similarly, public alert

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[42] Consultation with member states regarding proposed ITU framework for harmonization showed the need for at least 3 different classes of message. It has been suggested that a more intrusive behavior and a different ring tone may be needed for alerts, for example. The ITU has identified Life threatening 'alert' messages and less urgent 'civic alerts'. Accordingly the proposed addressing scheme provides alerts in the 900-999 block, advisory messages in the '800-899' block and presidential mandatory messages in the 10800-10999 block.

[43] A recently purchased Blackberry mobile device from T-Mobile implements the channel allocations for support of multiple languages that can be selected by the owner of the mobile device. These include MI 921 for English but also include German, Italian, French, Spanish, Dutch, Swedish, Danish, and others.

[44] *See* http://www.ceasa-int.org/library/Geneva%20V12.htm.

messages have been allocated block 900 to 999, and have corresponding assignments. For

example, a maritime alert is assigned to MI 901, an aeronautical alert is assigned to MI 902, an

English language public alert is assigned to MI 921, and a Spanish language public alert advisory

is assigned to MI 922. An assignment for missing child advisories can be similarly assigned to a

particular 800-block MI and Amber Alerts can be assigned to the corresponding MI in the 900-

block.

As currently proposed, but not finalized, Message Indicators and therefore any alerts and

advisories assigned an MI 0 and 1000 block are optional. In other words, a user would have the

option to receive such alert messages. In order to accommodate the delivery of mandatory alert

messages, a corresponding MI in the 10,000 block would be utilized. For instance, a mandatory

Presidential Alert in English language would be assigned MI 10921 and a Presidential Alert in

Spanish language would be assigned MI 10922. In this manner of addressing cell broadcast

messages, the mobile handset can be easily configured with software to ultimately provide the

delivery of mandatory alerts in the language of choice of the user and only deliver the optional

advisories and alerts, each also in the language of choice of the user when the user so chooses to

activate such capabilities. Contrary to the CMSAAC report, such messages classifications and

assignments are not only technically possible, but can be available for immediate

implementation. Additionally, adoption of Message Indicator allocation schemes and

assignments compatible with international standards will ensure that U.S. citizens traveling in

foreign countries will receive appropriate emergency alerts and foreign travelers in the U.S. will

receive appropriate alerts.

As noted, Message Indicator labeling and addressing are functions of the alert aggregator,

alert gateway, and the mobile handsets and are transparent to the CMS provider network.

However, from the CMS provider perspective the more uses of the CMAS network, the more advisories and alerts sent and the more languages supported, there is an increase in the amount of cell broadcast traffic that they have to transport. While we do not expect that this will initially require substantial cell broadcast bandwidth, it is understandable that the CMS providers may be concerned that the quantity of messages types and the languages supported for each type of message may have a greater impact on their network capacity and the bandwidth required for CMAS service. However, this is not a technical limitation as suggested by the CMSAAC report. Rather this is an engineering network design and capacity issue and therefore also a cost recovery issue for the CMS providers.

As to the Commissions request for comment on the definitions for "imminent" danger, this is not an issue that the Commission should have to decide or adopt technical standards for under the WARN Act, especially as to enabling the CMS providers to transmit the emergency alert messages. While the Commission can provide input on these definitions and classifications, such message and message class determination, management and administration, we recommend that such be determined by the various local, state, and federal alerting authorities who will be responsible for originating alert messages and who will be responsible to the public for such originated messages.

17.   <u>Service providers will support a capability for a text based common alerting message format across multiple service platform technologies based on market forces and public opinion, and do not need to be regulated in this regard.</u>

The Commission seeks comment on the content of CMAS alerts, including the CMSAAC's recommendation that all service providers support, at minimum, a capability for a text-based common alerting message format across multiple service platform technologies.

We agree with the recommendation of the CMSAAC that CMS providers, at a minimum,

support text based messaging, to the extent that such recommendation is using cell broadcast

transport technology and not SMS or other point-to-point text based messaging. This includes

implementation for both GSM and CDMA CMS network technologies. This could also include

future Wi-Fi or similar wireless platform technologies.

However, to the extent that any systems are not capable or not yet capable of supporting

cell broadcast technologies, the CMS providers should not be forced to upgrade non-capable

systems for the sole purpose of CMAS. For example, if any CMS providers were to still operate

TDMA or analog systems, we do not believe that the CMS provider should be required to change

out such systems.

We believe that upgrading their networks and offering CMAS emergency alert messaging

should be based on good engineering and business practices and principles. As such, we

recommend the Commission adopt technical rules and standards for the CMAS systems and let

market forces, public opinion and customer demand provide the CMS providers with the

incentive to voluntarily upgrade their networks and offer CMAS.

18.   The Initial Elements of the Commercial Mobile Alert Message (CMAM) can be defined but should be allowed to evolve over time.

The Commission seeks comment on the CMSAAC recommendation that the elements of

a Commercial Mobile Alert Message (CMAM) should be: (1) event type or category, (2) area

affected, (3) recommended action, (4) expiration time with time zone, and (5) sending agency.

The Commission seeks comment as to whether these elements are consistent with accepted

industry practices for emergency alerts and whether they are consistent with the evolving

concept of CAP-formatted messages. The Commission also seeks comment on whether the elements of a CMAM would evolve as experience is gained by alert initiators, and if so, how the evolution might occur.

In order for an alert message to be effective, the alert message needs to contain enough information for the recipient to take the appropriate action but not so much that they are overwhelmed. The recommendation of the CMSAAC in this regard appears to recognize that the ability to strike this balance is within the capabilities of the CAP message format at least for initial implementations. This recommendation also appears to provide a reasonable standard for messaging given the technical restrictions inherent in current CMS networks and in mobile handsets, e.g., display sizes and character presentation.

However, the content requirements of a CMA message that is the actual text displayed is likely to change over time as the alert message originators learn which format and content is most effective in different situations. This learning process will be similar to that which is undergone by users of existing alerting system. However, this evolution does not necessitate any change to the underlying transport protocols.

As noted above, many systems which can and will be used as the alert originator user interfaces are currently CAP compliant. However, reducing the amount of front end message origination effort required to originate a message, can provide for cross-system compliance. As with the evolution of the message requirements, the CAP standard will likely evolve over time as it becomes more widely adopted and used. However, this evolution will be in a structured, controlled and internationally recognized way to ensure backward compatibility and system interoperability.

19.   We recommend the Commission adopt rules for the automatic generation of alert text by extracting information from CAP fields, SAME codes and free-form text, with the generation of free text in amber alerts and Presidential alerts.

The Commission requested comments on the CMSAAC recommended method for automatic generation of alert text by extracting information from CAP fields, SAME codes and free-form text, and that the CMAS allow the generation of free text in Amber Alerts and Presidential alerts. The Commission also seeks comment on whether Presidential and Amber alerts can be structured to use automatic text.

It is in the nature of disasters and emergency situations that they are unpredictable, varied and changeable over time. In order for the CMAS to be effective, the system should enable and allow for free text alert message origination to the maximum extent possible. Free form text is created in the appropriate field of the CAP message. The CMAS system utilizes the inputs from the relevant CAP fields to build the alert message for transmission according to the capabilities of the transmission method. There is no technical requirement or reason why any alert messages including the Presidential and Amber alerts need to be treated any differently than any other type of alert. The alert aggregators can be configured to prioritize message processing and transmission based on predefined priorities that can and will change overtime.

Existing and currently available alert message origination user interfaces provide for both free form and canned messages. However, only the free form message will provide the message originator and the receiving public with the information specific to the situation requiring that the message be sent. If under certain situations a particular message originating entity would find it useful to have a set of predetermined text messages to meet particular situations, then such can be developed in a library in the user front end. However, there is no technical reason to adopt a

rule that limits or inhibits a message creator in this regard. Additionally, such limitations will

negatively impact the usability of the system and the ability to transmit the required alert to the

public.

We recommend that the Commission ignore this recommendation of the CMSAAC for

these reasons. Additionally, we recommend that the Commission ignore this type of

recommendation from the CMSAAC as it addresses CMAS infrastructure and operational issues

and is independent of any required technical standards, protocols or requirements related to the

CMS provider's capability to support and offer CMAS alerting transport through their networks

and to handsets. The message type and content within the emergency alert message is

independent of any technical requirements of the CMS providers and as such is transparent. We

recommend that the determination of the message content and similar requirements be left to the

government agency or entity, whether at the local, state or federal levels, that is empowered to

originate alert messages. We believe that a Commission adopted recommendation or standard

that limits message content would be inappropriate.

20.   **We recommend not including reference to other point-to-point systems in alerting messages.**

The Commission seeks comment on whether the alert message should include telephone

numbers, URLs or other response and contact information in certain Commercial mobile alerts.

The Commission asked whether there is public safety value to the inclusion of such information

in a Commercial mobile alert and as to whether there would be an impact on the network or other networks and services.[45]

It is our opinion that there is a danger in transmitting a URL or phone number in a mass alert message. Such an inclusion could create the massive outages and congestion in necessary supporting infrastructure that was specifically addressed with the use of point-to-multipoint technologies such as cell broadcast. As noted by the CMSAAC, point to point systems are not preferred for emergency alerting and this suggestion seems to shift the time and space of such to multiple point to point communications following the initial receipt of the emergency alert message via the mobile handset.

It is our recommendation that the emergency alert message not include references to secondary point to point communication services, but rather to other broadcast systems such as television or radio.

21.   We recommend the Commission require geographical targeting (geo-targeting) of CMAS alerts on a transmission area or cell basis as it is currently technically available.

The Commission seeks comment on the CMSAAC recommendation that an alert that is specified by a geocode, circle or polygon be transmitted to an area not larger than the CMSP's approximation of coverage for the county or counties with which that geocode, circle or polygon intersects.[46]

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[45] In prior emergencies, mobile traffic increased to the point of network congestion. The Commission asked what would be the impact network congestion if subscribers were directed to a specific number (such as a "311" number in New York City) or URL?

[46] The CMSAAC based it on an unsupported assertion that technical limitations currently preclude dynamic geo-targeting at a level more granular than the county. In section 5.4 of its recommendations, the CMSAAC acknowledged "that it is the goal of the CMAS for CMSPs to be able to deliver geo-targeted alerts to the area

As an initial matter, there are existing systems that enable a message originator using a

graphical user interface (GUI) to select an existing message target area from among a set of

previously defined target areas or to graphically define a target area on a map based on the

particular emergency requiring the alert. These systems include an authentication process to

ensure that the particular message originator is authorized to send an alert message to the

geographic area designated by the originator. A CAP message[47] is generated that includes the

definition of the message target area as a simple polygon or a complex geodetic structure.

Existing alert aggregators process this message and send it through the equivalent of the alert

gateway. The alert gateway reviews the message target area and transmits the CAP message to

the participating CMS provider networks providing service in at least a portion of the message

target area.

The messages are sent by the alert gateways to either a shared CBC providing an

interface to more than one CMS provider or to a CMS provider's dedicated CBC. In either case,

the CBC maps the message target area to the cell[48] or groups of cells of the CMS provider

network.[49] The CBC transmits the stripped down alert message through the CMS provider

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specified by the Alert Initiator." However, the CMSAAC recommended that, due to current limited capabilities on
the part of CMS providers, ""an alert that is specified by a geocode, circle or polygon . . . will be transmitted to an
area not larger than the CMSP's approximation of coverage for the county or counties with which that geocode,
circle or polygon intersects."

[47] In the CAP format, a series of WGS84 coordinates forms a message target area Polygon.

[48] In cell broadcast systems, it is possible to select an individual cell or groups of cells. This makes the resolution
down to one cell possible. In an urban environment, a cell is about one mile in radius and in a dense urban
environment a cell may be a few hundred yards in radius. Therefore, the practical resolution of a polygon into
actual coverage on the ground will depend on system technology, frequency band and network design applied.
Because of this, it would be counter productive to set an exact figure on the resolution, as this may exclude some
solutions that would otherwise be acceptable as long as this limitation was respected.

[49] The cell broadcast center (CBC) converts the polygon defined by the message target area into a list of the fully
qualified global logical addresses of the cells, and then identities any BSC to which the cell is attached. This requires
access to the proprietary CMS provider files referred to as the 'Cell Data File'. The cell planning department of each
CMS provider produces a cell data file after each change to their cell plan in order to inform the BSCs within their
networks of any neighbor relationships. The CBC reads this file and maps CMS provider antenna locations that are
inside the message target area. In some cases the CMC can also reverse engineer the cell data file to provide an

network BSC to the wireless network transmission equipment that provides wireless service to

some or all of the message target area.[50] The cell or group of cells which the CBC maps as being

within the message target area generally is preferred to be any cell that serves at least a portion of

the message target area defined by the message originator.

However, by prior agreement, trust protocol agreement, government regulation, or

message originator input, the alert gateway and/or CBC can also provide for the inclusion cells

that are adjacent to or around any cell serving a portion of the message target area. These are

issues that should be addressed by the appropriate system administrator and do not need

government regulation. However, as described, alert message delivery using cell broadcast is

currently technically possible of being on a cell specific basis. There is no technical limitation in

this regard and the CMSAAC report is technically incorrect and it incorrectly assigns the known

limitations for support of SMS message delivery to cell broadcast message delivery.

It should also be noted that it is not technically required nor is it desirable for the message

originators GUI interface to graphically display one or more CMS provider cell coverage or

locations. These are generally proprietary and are constantly being changed by the CMS

providers to meet the needs of their networks and subscribers. Additionally, this detailed

network data is not required by the message originator. The message originator only needs to

define the target area based on the geographical needs of the impending emergency. The CMAS

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approximation of the cell coverage to include all cells providing service to at least a portion of the message target
area.
[50] It should also be noted that cells typically have 'fuzzy' borders because of a feature called the 'Hysteresis Zone'.
This zone is a place where mobile devices may be in the coverage of a primary cell, but also within the coverage of
a secondary cell such as the cell from which the mobile device has most recently traveled. In order to prevent 'ping
ponging' that would otherwise occur in the CMS provider network, a 'Hysteresis Zone' is typically defined to be
about 100 yards wide. In the Hysteresis zone, two adjacent mobile devices may in fact be served by different cells
or towers.

infrastructure provides the necessary mapping from the message originators and emergency

situational needs to the technical delivery requirements.

Additionally, in a hierarchical CMAS architecture as described above, the alert

aggregator or alert gateway can also distribute the originated message to higher or lower systems

based on the defined message target area. For example, if there is a hazardous chemical spill in

the Mississippi River at St Louis, a message originated from a disaster manager in East St. Louis,

Illinois can be sent locally to CMS providers on the Illinois side of the river and the message can

be shared with systems supporting the Missouri side of the river based on the mapping of a

message target area that includes both sides of the river that may be affected by the spill.

In the future, improvements to the CBC could utilize GIS formatted data to determine

coverage and thus provide some improvements to the mapping resolution. In addition, CBCs can

be improved to handle 'hierarchical cell structure' within the context of multiband and

multisystem technology, if and when implemented by the CMS providers.

From this, it should be understood that the ground area that actually receives a cell

broadcast alert message will most likely not correspond exactly with the jurisdictional area of the

message originator.[51] However, use of the area affected portion of the CMAM message can help

to provide customers of the appropriateness of the received message. For example, a CMAM

message can state: "=SPRINGFIELD= STAY INDOORS AND CHECK LOCAL RADIO FOR

ADVICE." An adjoining message could read "=SHELBYVILLE= IMMEDIATE

EVACUATION ORDERED BY MAYOR." This type of CMAM information will be useful

regardless of the degree of geo-targeting.

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[51] For example, a Presidential originated message sent to cover all of the U.S. will also be sent to receiving mobile devices outside of the U.S. along its borders.

It should also be recognized that other solutions are available for the mobile device to provide a determination as to whether the mobile device is within the message target area. While such systems can provide for improved targeted message delivery, such systems require the transmission of the message target area polygon through the CMS provider's network. This will require a significant increase in the message size and therefore the bandwidth utilization of the CMS provider network. Additionally, every mobile device would be required to be equipped with GPS and also be required to be equipped with software for comparing the current GIS location with the received message target area in order to determine whether the alert message should be displayed and presented or whether it should be ignored. These systems can provide resolution down to a few yards. However, these require significant development and will require a new mobile handset.

22. **There is no technical requirement to differentiate or define different standards based on serving area size or demographics.**

The Commission seeks comment on the CMSAAC recommendations raised in section 5.4 of the CMSAAC's recommendations that a process be initiated by the Alert Gateway operator and the CMS providers to identify priority locations by August, 2008.[52] In other words, the CMSAAC recommended that there was a technical need or other requirement for a CMS provider to differentiate between implementation areas based on size, location, or particularly urgent alerting needs.

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[52] The CMSAAC stated that a "CMS provider may elect to target smaller areas" and recommended "that certain urban areas with populations exceeding 1,000,000 inhabitants or with other specialized alerting needs be identified for priority consideration regarding implementation of more precise geo-targeting."

As described above with regard to Item 21, existing systems and equipment are available for immediately enabling CMAS implementation to all portions of and serving areas of the CMS providers. A shared CBC or CMS provider dedicated CBC at the "C" demarcation point as defined in the CMSAAC Report in Figure VII-1, receives the emergency alert messages from the alert gateways. The CBCs determine which cell or cells should receive the cell broadcast message and transmit the message through the CMS network for wireless transmission. Existing CBCs are capable of supporting considerable serving areas and large networks with many BSCs. While traffic management will be a consideration, this type of engineering challenge is well known to the telecommunications industry. Contrary to the CMSAAC finding, there is not a technical need or requirement that a CMS provider differentiate between implementation area based on size, location, or particularly urgent alerting needs. The only issues are network interface planning issues and traffic engineering issues for determining how many CBCs will be required and where to put them based on their current or future network. Numerous BSCs can easily be supported by available CBCs. CMS provider networks are designed to efficiently route and manage traffic between BSCs and integrate rural serving areas with urban areas. These are provided through network traffic and facility engineering design which can easily accommodate cell broadcast message handling for implementation of adjacent rural serving areas with urban serving areas.[53]

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[53] The CMSAAC recommendation in this regard appears to be another unnecessary importation of a limitation of SMS messaging that does not apply to cell broadcast implementations. If the CMSAAC had directly addressed cell

23.1 **We recommend the Commission adopt standards that encourage ongoing technology development and consider future technical and/or accessibility requirements to ensure that commercial mobile alerts can be received by people with disabilities and the elderly and that product development is incented.**

The Commission seeks comment regarding the CMSAAC recommendations addressing the needs of users, including individuals with disabilities and the elderly. In particular, the Commission seeks comment regarding the recommendations that the CMAS support a common audio attention signal and a common vibrating cadence to be used solely for CMAS alerts and whether the CMAS requires these attention signals for all users. The Commission also seeks comment regarding the CMSAAC recommendation that the alert initiator use clear and simple language whenever possible, with minimal use of abbreviations and that the mobile device be able to provide an easy way to allow the user to recall the message for review.

Services for the disabled and elderly can be accommodated through the use of enhancements by mobile device manufacturers. These can include mobile devices that are specific to the particular disability. No changes to the CMAS or CMS provider networks are required. For example, alert messages are sent as a text message, a mobile device can be configured to enable the elderly or blind to hear an audio conversion of the message. Text-to-speech technology and applications are currently available that could be incorporated into mobile devices. For the blind, it is also possible to have a mobile device that converts the alert message to a Braille-type output. Similarly, a mobile device can be configured such that a deaf user is alerted to an incoming alert message with a vibrating function. Such vibrating capabilities are already well known. Mobile devices are very competitive and extremely flexible and

broadcast technology these issues could have been addressed at that level rather than requiring the Commission to address.

customizable. The competitive mobile device market will provide mobile devices to disabled

users to meet the requirements of the market and to meet the requirements of the CMS providers.

23.2 <u>We recommend that legacy mobile devices not be exempt from supporting CMAS where technically feasible and a cost effective solution exists.</u>

The Commission seeks comment with regard to the CMSAAC recommendation that

legacy mobile devices not be required to support CMAS, notwithstanding that much of the

special needs services will depend on features in the mobile device. The Commission asked

whether there is a way, such as through software upgrades, for present legacy mobile devices to

support CMAS.

As addressed above, in contrast to the statements and findings of the CMSAAC, many of

the mobile devices that are currently being offered by CMS providers support cell broadcast

message receipt, including receiving messages in more than one language. Some of the legacy

mobile devices will require a Subscribers Identity Module (SIM) replacement to activate and

utilize the inherent cell broadcast feature of the mobile device. In other cases, the user or the

CMS provider representative only needs to enter a code sequence to unlock the feature. As also

previously noted herein, many of the mobile devices being offered in the storefronts of the CMS

providers today include cell broadcast and are only waiting on the network implementation and

support for such capability. The CMS providers have discontinued support for non-compliant

technologies, e.g., TDMA. Also the CMS providers offer their customer a new mobile device on

initial service activation or upon renewal of a service contract. As such, many of the legacy

mobile devices that are not capable of supporting or upgrading to cell broadcast will be churned

within the next 12 to 18 months.[54]

We agree that non-upgradable mobile devices should be exempt. However, we do not

agree that existing mobile devices that can have cell broadcast feature enabled through a SIM

chip upgrade or code activation should be exempt. Such an exemption would be counter to the

timely availability of emergency alert warning as envisioned by the WARN Act.

24. **Contrary to the CMSAAC Report, currently available cell broadcast transport technology, handsets, and alert aggregators and alert gateways can technically provide commercial mobile alerts in multiple languages using cell broadcast.**

The CMSAAC suggested that there may be fundamental technical challenges to

implementing parallel alerts in languages in addition to English. The Commission seeks

comment on the CMSAAC view. The Commission recognized the significant public safety

interest in delivering alerts to speakers of languages other than English and strongly affirmed this

principle in our May 2007 EAS Second Report and Order. CMSAAC also asserted that

multilingual (and geo-targeted) alerting would raise latency (alert delay) concerns. The

Commission seeks comment on how the requirements for multi-language alerts would affect the

generation and distribution of messages on a local, state and national level.

As discussed above in the Comments regarding message classes under Item 16, pending

international standards for the Message Indicators (MIs) provide for the support of advisory and

alert messaging in multiple languages. There are two proposals for addressing multi-language

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[54] The Canadian government has noted that the average Canadian upgrades his phone about every two years. Therefore, they have considered asking the mobile device vendors to debug the firmware for all capable mobile devices from a certain time. The natural short lifetime of the mobile devices will cause the issues pertaining to legacy mobile devices to quickly go away.

support at the ITU. At this time, the ITU working committee has allowed for both proposals by

allocating MI/SC blocks or bands to support both solutions.

One proposed solution is that a different MI/SC number is used for each language. The

user can then select the language he wants to have displayed and therefore read. The default

language in his mobile device will then display the message correctly. In order to support all

recognized major languages, there needs to be 160 MIs allocated just for multi-language support.

However, the allocation of a separate MI for each recognized major language can be inefficient.

As such, a compromise solution has been developed whereby a dedicated group of MIs is

defined for a first group of languages that would be supported internationally. A second group

of MIs is identified as a pool for other languages that are unlikely to be transmitted in the same

country. In this manner, fewer MIs need to be dedicated and supported in all systems throughout

the world.

As another proposed solution, the mobile handset is configured to read the language code

from the preamble of the cell broadcast message or a two byte code at the start of the message

and discard messages in an unsupported language. The selection of which can be made by the

user from the cell broadcast menu on the phone. For example, MI 920 is proposed as the multi

language MI and Dutch language MI, so that the Dutch will not have to change their system. On

the other hand, English can be received on MI 921.

Technically, local dialects could also be supported provided the sender originates the

alert message in that dialect and the mobile device has the ability to support the required fonts or

characters.

Several current suppliers of alert originator user interfaces, alert aggregators, alert

gateways and mobile handsets have implemented the second proposal at this time. As noted, a

recently purchased mobile device from a CMS provider included the ability for the owner of the

mobile device to select one or numerous languages in which to receive alert messages once the

CMS provider activates the message broadcast feature in their network and when the CMAS

infrastructure originates a message in that chosen language. Contrary to the CMSAAC report,

these technical capabilities and implementing products exist today.

However, there are practical limitations to multi language support, but these are related to

alert message origination, and are not technical limitations of the CNAM infrastructure. The

originator of an alert message must be able to originate the same alert message in multiple

languages accurately and in a timely manner. If the message originator is multi-lingual in all of

the desired languages, multiple languages can be generated and the CNAM infrastructure can

process and transport each in a timely manner. The mobile device selects which message to

receive and display based on user selection. The practical language translation issues could be

addressed with software-enabled translators, however the accuracy of such would need to be

validated before the message is transmitted.

Finally, as to potential message latency in the CMS provider network, cell broadcast

provides that one page of data can be transmitted every 1.8 seconds. Assuming that each page

was limited to 90 characters and that three languages are supported, such as English, Spanish and

French, there would be a difference between the transmission of the first message and the last

message of only 3.6 seconds. Generally, such a short delay between the transmission of a

message in a first language to the transmission of the same message in a second or third language

will not be discernable to a mobile device user and will not negatively impact that user's ability

to react to the impending emergency. It is understood, however, that there may be discernable

latency issues if more than 10 languages were supported, but such support would be rare and

may be impractical anyway.

It is recommended that the Commission specify cell broadcast as the standard and

protocol for the CMS providers and that the CMAS be configured to support the current

proposed and supported ITU MI allocation for multiple languages using cell broadcast.

32.   **There is no regulatory or technical requirement that the Commission requires or expects that a CMS provider explicitly commit to support the development and deployment of technology in particular areas.**

The Commission seeks comment regarding the CMSAAC recommendation with regard

to the CMS providers supporting a particular network implementation. In particular, the

CMSAAC recommended that the CMS providers provide support for: the "C" reference point,

the CMS provider Gateway, the CMS provider infrastructure, and the mobile device with CMAS

functionality. The Commission also seeks comment as to the CMSAAC suggestion that the

required technology may not be in place for some time.

As discussed generally by our comments, the CMSAAC suggestion that the required

technology for implementation and support of CMAS by the CMS providers is not available, is

not accurate, misleading, and not technically correct. The FCC is commended for providing the

many opportunities in this NPRM for commentary to address the viability of Cell Broadcast as a

potentially life saving emergency notification system for the American people and those visiting

this country. The FCC has an opportunity to bring together for the greater good of all citizens

the will of government and emergency management at all levels with the elements within private

industry having the necessary expertise and capabilities. We are encouraged by the

Commissions NPRM requests for comment in view of the CMSAAC report.

As noted herein, we urge the Commission to adopt rules specifying cell broadcast

technology as required by the WARN Act Section 602(a) such that commercial mobile service

alerting service will be available to the American public in a timely manner.[55]

36.   There is no technical need to limit the message types to the three message types that a subscriber should be allowed to choose to opt out of receiving.

The Commission seeks comment with regard to the CMSAAC recommendation that

CMS providers and device manufacturers should have flexibility as how to present any opt-out

choices to subscribers or whether the Commission should establish baseline criteria for

informing subscribers of this capability and if any uniform standards for conveying that

information to subscribers is required.[56] The Commission also seeks comment as to what extent

is a uniform methodology required for disabling the feature and whether there more classes of

alerts that should be considered.

We agree with the CMSAAC recommendation that the CMS providers and the mobile

device manufacturers need flexibility in how to present opt-out or out-in options to mobile

device users. The Commission correctly acknowledged that there are current and future devices

that have different user interfaces and menu structures for enabling and disabling device features.

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[55] We note, however, that there are no mechanism or resources provided by the WARN Act for supporting the coming together of industry resources in an expedient pragmatic manner, as will be necessary to implement the CMAS. We suggest that such a mobilization of resources can be initiated by the Commission.

[56] Section 602(b)(2)(E) states that "any commercial mobile service licensee electing to transmit emergency alerts may offer subscribers the capability of preventing the subscriber's device from receiving such alerts, or classes of such alerts, other than an alert issued by the President."

It would be impractical for the Commission to establish technical standards in this regard and

may in fact result in unnecessary delays in the implementation and support for CMAS if such

were adopted by the Commission.

However, it should be noted that the present situation is one of great variance in the

presentation of the feature. The lack of consistency of menu presentation is a clear disincentive

for a mobile device owner to enable the feature as it is difficult to figure out how to find it,

switch it on, and then select your MIs. However, these differences in menu functionality between

different mobile devices apply to all mobile device functionality and not just to cell broadcast

and have not hindered the user's use of other mobile device features. Clearly suggestions as to

improvements in the handling of this can be directed towards mobile device manufacturers as has

been done by the government of Holland. A further solution to this problem was suggested by

the Canadian government. This included requiring all mobile devices shipped in Canada to be,

by default, equipped with cell broadcast enabled with all mandatory warning channels (as

provided by the assigned MIs) turned on at the time of delivery to the user. In this manner, the

churn in mobile devices will mitigate these issues in a relatively short period of time.

As referenced above with regard to Item 16, it is recommended that the Commission

adopt technical standards and requirements in support of cell broadcast MIs and SC allocations

and assignments that include dedicated MIs for non-opt out alerts such as Presidential Alert

using MI 10921 for English and 10922 for Spanish.

37. <u>**CMAS using cell broadcast technology is currently available, and the products have been technically demonstrated, and as such, the Commission can focus their future review on CMS provider implementations and adoptions of such existing technologies and standards.**</u>

The Commission seeks comment with regard to the appropriate mechanism for complying with Section 602(b)(2)(E) that requires the Commission to, within two years of the adoption of the technical requirements, examine the issue of whether a CMS provider should continue to be permitted to offer its subscribers an opt-out capability. The Commission also seeks comment on whether the Commission can expand the scope of this inquiry to other questions concerning the development of the CMAS. The CMSAAC recommended that the Commission expand its two-year inquiry to include issues and concerns on the development of the CMAS due to their belief that the CMAS is a new and untested system and that periodic review would be required as it is deployed.

We do not believe that a two-year review as suggested by the CMSAAC is required as a nation wide CMAS cell broadcast-based alert messaging system can be implemented and operational in 12-18 months utilizing existing products and technology with the adoption of appropriate rules by the Commission under this NPRM. The CMSAAC recommendation in this regard is based on omission in making the required technical recommendations as required by Section 603(c) of the WARN Act. The CMSAAC members were aware of cell broadcast technology, the standards, the capabilities, and the products that currently exist to support and provide for a timely implementation and availability of CMAS emergency alert messaging for the American public as envisioned by the WARN Act. The CMSAAC findings could have provided the Commission or the American public with this knowledge. Recommendations regarding significant delays or technology development requirements, such as stated in this

section, only contribute to distracting the Commission in adopting technical standards for the

timely implementation of CMAS emergency alerting. It is recommended the Commission ignore

these recommendations and adopt rules that will provide the CMAS system and capabilities in a

timely manner. The American public deserves no less.

38.   <u>**We recommend that CMS providers be allowed to recover their initial
            implementation costs and ongoing infrastructure support costs.**</u>

The Commission seeks comment as to whether Section 602(b)(2)(C)[57] completely

precludes a participating service provider's ability to recover costs associated with the provision

of alerts. The Commission also seeks comment regarding CMS provider's costs for CMAS-

related services and technologies that are not used to deliver CMAS. The Commission asked

whether the reference to "transmission or capability" within the limitation on cost recovery

should be interpreted narrowly and whether it included the alert technology resident in the

subscriber's mobile device. In particular, the Commission seeks comment on whether mobile

devices are outside the "transmission or capability" language of the Section 602(b)(2)(C) and

therefore still provide CMS providers the opportunity to recover CMAS-related developmental

costs from subscribers through mobile device charges.

As addressed otherwise herein, in order to implement CMAS, the CMS providers will

technically only need to: 1) purchase and implement one or more currently available CBCs as

interfaces to their networks for receipt, processing and transmission of alert messages to the

BSCs and cell transport network equipment; or in the alternative obtain such service from a

shared CBC or CBC service bureau; 2) license and activate the cell broadcast feature in each of

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[57] Section 602(b)(2)(C) states "[a] commercial mobile service licensee that elects to transmit emergency alerts may
not impose a separate or additional charge for such transmission or capability."

their BSCs if this capability is not already active; and 3) possibly establish a program for SIM card replacement for some mobile handsets or obtain the activations codes from the mobile handset vendors, depending on the particular handsets. Admittedly there will be costs involved with each of these. To the extent that such costs are specific to CMAS emergency alert messaging, the CMS providers should be allowed to recover these implementation and incremental operational costs. Recovery of such costs should be considered through an end user fee arrangement for a limited time, and not on a message delivered basis.

With regard to the mobile handset, it is difficult to see how cost recovery can be provided for upgrading mobile handsets. The majority of mobile handsets are currently enabled, some only require entry of the appropriate activation code sequence to unhide the feature, others will require a SIM card replacement, and others are not currently upgradeable. However, it is our view that since these is a typical two-year or less churn on mobile handsets, the customers will either have to wait for their next free or discounted cell broadcast capable replacement mobile handset, or will gladly pay for a replacement SIM card if required. This may present a revenue opportunity for the CMS provider as subscribers opt to upgrade their mobile handsets and service contracts earlier than they might have otherwise. In the trial by Einstein Wireless, they experienced that the simple posting of the activations code sequence by the CMS provider on a webpage has little to no incremental cost.[58]

We are not expert in such cost recovery and cost allocation, and will leave such to the experts. However, we do support such cost recovery in theory especially to the extent that it may be required in order to obtain the opt in of the CMS providers to implement CMAS and in particular cell broadcasting capability.

41.   We recommend the Commission issue a separate NPRM regarding WARN Act Section 602(f) for establishment of rules and regulations for technical testing of CMS providers and the CMAS system.

The Commission seeks comment on what type of testing regime is required for the CMAS and for CMS providers. The Commission also seeks comment on the CMSAAC's procedures for logging CMAS alerts at the Alert Gateway and testing the system at the Alert Gateway and on and end-to-end basis in order to assure the reliability and performance of this new system. The Commission asked whether such procedures would satisfy the requirements of section 602(f) of the WARN Act. The Commission further seeks comment on whether there should be some form of testing of the CMAS that sends test messages to the mobile device and the subscriber. Additionally, the Commission asked whether the internal systems test should be combined with tests that are heard (or in some cases seen) by the public such that all subscribers could participate or whether the CMAS testing process should be invisible to the subscriber.

The public testing of the CMAS system will provide several benefits for assuring the local, state and federal governments that the system will in fact work as funded and relied on. Additionally, periodic testing will provide system operators with the ability to test the systems where otherwise such testing may be incorrectly perceived by the public. Finally, the public will benefit from regular testing as they will have the ability to verify the receipt of alert messages on their mobile handsets on a regular basis. All of these will go to ensure that the American public will in fact receive the emergency alert message if and when an emergency does occur.

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[58] *See* http://www.einsteinpcs.com/resources/einstemergencyalertsetup.pdf

For example, if a test message is sent every first Tuesday of the month at 11:00 a.m., the system operator can perform their desired testing and the public will become accustomed to receiving such, similar to the weekly testing of alarm sirens. It is our view that testing more often than once a month is not technically required, but may be required for public policy reasons. A public test could mimic the public testing of the emergency alert system as broadcast by television stations: "=TEST=THIS IS ONLY A TEST MESSAGE OF THE PUBLIC ALERT WARNING SYSTEM." Such a test message can be transmitted over all of the supported public warning cell broadcast channels, as provided by prior assignment of a dedicated Message Indicator (MI). However it is very unlikely that even the most diligent population will tolerate more than a monthly test of this. However, system operators need to know if there is a problem much sooner than that, so additional facilities need to be included.

Additionally, system operators can also arrange for non-public or silent testing. The CMAS infrastructure can provide for testing using a predefined and dedicated cell broadcast MI where any mobile handset owner, CMS provider employee or government representative could activate the MI to verify CMAS system and mobile handset operation.

42.1   The CMAS and the EAS are consistent with the needs and requirements for implementation of a national alert system as well as implementation of state, local and private alerting systems.

The Commission seeks comment about how the CMSAAC's proposals for a CMAS relate to the directives contained in that President Bush's June 2006 Executive Order. The Commission seeks comment about the overall compatibility of the CMAS with the EAS. The Commission also seeks comment as to whether they should mandate compatibility between the

CMAS and EAS as both alert systems will provide important emergency information to

American citizens and both systems would seem to qualify for inclusion in the "national alert

system," to be developed and coordinated by FEMA. The Commission seeks comment as to

whether the adoption and incorporation of CAP1.1[59] for the CMAS ensure that CMAS is

compatible with a CAP-formatted EAS alert delivery system.

As addressed above, the Federal CMAS infrastructure utilizing existing and available

alert message originator interfaces, alert aggregator, and alert gateways, are transport technology

independent. Additionally, these systems are designed as distributed processing systems that can

be hierarchically deployed and include API interfaces for interfacing with state and local systems

and with other systems including EAS. This interconnectivity is enhanced through the common

adoption of the CAP 1.1 protocol.

42.2   Recommended additional legislative enactments desirable for implement The Commercial Mobile Alert System.

The Commission seeks comment on what additional statutory authority, independent of

the WARN Act, the Commission would require to implement a mobile alerting system.

There are several areas that should be considered for further statutory and regulatory

consideration for providing nation-wide mobile alerting as initiated by the WARN Act.

Following are an initial set for consideration by the Commission and the other commenter to the

NPRM.

A. Limitations on liability to CMS providers and CMAS Operators.

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[59] The CMSAAC proposed use of CAP1.1 as the standard CMAS alert interface. The Commission mandated that

Unfortunately, there can be considerable exposure to increased liability for those

involved in the operation of the CMAS. This includes the alert message originators such if they

were to incorrectly define an alert message target area, not fully appreciate the extent of the

emergency, or to exaggerate the emergency condition. The operator of the alert originator

interface, the alert aggregator and the alert gateway operator can have increased liability

associated with processing the alert messages, authenticating the alert messages and distributing

the alert messages to the various transport networks, one example being the CMS providers. The

CMS providers can have increased liability for processing the received alert messages and

delivering the messages to the alert message target area or designated cell or groups of cells.

While government authorities that may provide for some of these functions have a degree of

legal protection, any non-governmental person or entity, such as the CMS providers, will likely

be exposed to potential lawsuits. These issues were recently addressed in Canada by Industry

Canada in considerations of implementation of an alerting system. [60] We recommend that

legislation be considered to address the liability of the participants involved with the

implementation and operation of the CMAS system.

B. Funding for the CMAS infrastructure and compensation to the CMS providers for their
network implementation of CMAS transport functionality including cell broadcast.

The implementation and operation of the CMAS at the Federal and Interstate level will

require funding by Congress. While some funding was provided in Section 605 of the WARN

Act for remote communities, Congress did not provide funding for the CMAS infrastructure.

Additionally, the WARN Act provided limitation on the participating CMS providers charging

for emergency alert messages. It is our view that this was primarily focused at ensuring that the

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CAP1.1 shall be the standard interface for the evolving EAS (if it is adopted by FEMA).

model and rules for implementing CMAS would be cost free to individuals who receive the alert

messages, probably due to the experiences of many with regard to having to pay for received text

messages using the SMS technology. However, we support providing compensation to the CMS

providers for implementation of CBC functionality either in consortiums or individually and for

activation of the cell broadcast feature in their BSCs.

     We also support compensation to the CMS providers for additional customer support that

will be incurred when the CMAS is made available to the public. Initially, inconsistent handset

performance will increase customer support requirements of the CMS providers. Additionally,

customer education will be required.

[60] *See* Legal Liability Consultation Draft, CANALERT Legal Liability Working Group, April 26, 2007.

CONCLUSION

The Commission has a difficult challenge ahead, especially in view of the CMSAAC report and its overlooking the making of appropriate technical recommendations, to adopt technical standards, protocols, procedures, and other technical requirements necessary to enable commercial mobile service alerting capability for CMS providers that voluntarily elect to transmit emergency alerts.

In addition to the WARN Act mandates, the Commission has the opportunity to provide the industry, other government agencies, and the American public their input and guidance on issues and recommendations associated with the deployment of a CMAS infrastructure for the origination, processing and delivery of such emergency alert messages to the CMS providers.

While we have been critical of the CMSAAC report and the lack of required technical recommendations contained therein, the CMSAAC report does provide a foundation on which comments could be based and on which the Commission could meet its WARN Act obligations. We hope these comments will be useful to the Commission.

Respectfully submitted,

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